



DEPARTMENT OF THE INTERIOR

INFORMATION SERVICE

BUREAU OF FISHERIES

For Release SUNDAY, JUNE 9, 1940.

Conservation and the American Fish Supply

A Review of Seven Decades of the Bureau of Fisheries

By

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After nearly 70 years of operation the United States Bureau of Fisheries this week joined a new integrated conservation unit, the Fish and Wildlife Service of the United States Department of the Interior. Culminating its long career as one of the Government's pioneer conservation agencies, the Bureau of Fisheries has teamed up with the Biological Survey to form an effective new unit.

This streamlining of the two Federal agencies dealing with the living natural resources of the United States is regarded as one of the most significant steps forward for conservation in many years. It will operate under the direction of Secretary of the Interior Harold L. Ickes, and improved service to the public and to the Nation is expected in the fish and wildlife fields. The merger was accomplished under the President's reorganization plan No. III.

Unification of the two services will allow complete blending and intensification of efforts in fisheries and wildlife. The public, the commercial fisherman and allied industries, the angler and the hunter, will benefit. More effective game and fish development and greater coordination of work in the several fields are expected as a result of the consolidation.

We, who have had an active hand in developing and expanding the activities of the Bureau of Fisheries to its present status, are justly proud of its history and its record of notable achievements. Now, more than ever before, we are looking forward to an even greater scope for fishery activities, with more ease of movement, and with better hope for expansion of our services.

The Bureau of Fisheries--for the seven decades of its existence--has been the sole governmental agency concerned with the promotion, management, and conservation of both the fresh-water and marine fishery resources of our Nation. Since earliest times these fishery resources have played a significant role in the social and economic life of the American continent, for they are one of the two fundamental sources of foodstuffs for our country. The colonization of the New World was indeed made possible partly by the large supply of fish in American waters.

It was nearly seventy years ago, during the administration of President Ulysses S. Grant, that the Federal Government began its battle to protect and maintain the fishery resources of our country in order to assure a supply of marine foods and to assure continuation of the sport of angling to future generations. Aware of the alarm which was spreading because over-fishing was putting a drain on this natural resource which Nature, without help, could not replenish, Congress established a Fish Commission in 1871. It passed a joint resolution authorizing the appointment of a "Commissioner of Fish and Fisheries for the purpose of investigating the alleged decrease of the food fishes of the seacoasts and lakes of the United States, and to suggest remedial measures".

In the 69 years since its establishment, the Bureau has grown from a small, supposedly temporary "one-man in one-room" institution, into one of our foremost Federal conservation agencies. Its activities extend into every State of the Union and into every one of Uncle Sam's possessions. It reaches out to neighboring waters and into the depths of the sea, leaving no line of fisheries work untouched. Its scope of work, personnel and equipment have so expanded through the years until its personnel includes some 600 employees in the field service who operate and maintain 110 hatcheries and 35 biological laboratories and statistical offices.

When the new Fish Commission first was set up, Congress stipulated that the Commissioner should be a "civil officer of the Government, of proved scientific and practical acquaintance with the fishes of the coast, to serve without additional salary". On July 1, 1903, it was included by law in the new Department of Commerce and Labor, and from that time on was designated, by departmental order, as the "Bureau of Fisheries". On subdivision of this department in 1913, the Bureau became identified with the Department of Commerce where it remained until its transfer to the Department of the Interior on July 1, 1939.

As conceived originally, the Fish Commission was planned as an organization for scientific, statistical and practical investigations of the fisheries. In 1872, however, it was given authority to establish fish hatcheries for the propagation of food fishes; in 1905, it was charged with the administration and enforcement of the laws governing the salmon fisheries of Alaska; and in 1908 the Alaska fur-seal service was transferred to it.

Since then, various additions to the Bureau's duties have been imposed. In 1920, the protection of sea otters, walruses, and other aquatic mammals in Alaska was placed in its charge; the construction of fishways at dams built under license from the Federal Power Commission was authorized by the Water Power Act of 1924; enforcement of the act relating to the interstate transportation of black bass, in 1930; administration of the act authorizing cooperative associations of producers of aquatic products, in 1935; administration of the Whaling Treaty Act, in 1936; and, in 1939, funds were provided for the establishment of a Hydraulics Section to design and construct fish screens, ladders, and other fish protective devices.

Except in the territory of Alaska, the Bureau is without executive control of the fisheries as, under the Constitution, the several States legislate for themselves. Essentially, the Bureau of Fisheries is a scientific organization; the results of its investigations are, therefore, furnished to State fishery authorities as a basis for adequate protective legislation, and to the fishing industry for more economical and lasting use of fishery products.

Although it acts in a purely advisory capacity, it influences fishery legislation profoundly. In Alaska, where the most important salmon fisheries are located, the Bureau enforces fishery laws; and in the Pribilof Islands, where the valuable fur seals come ashore each year to breed, it has entire administrative control of the native inhabitants, the fur-seal herds, and the growing of foxes for their pelts.

The Bureau is now organized into five major divisions which handle separate phases of the problem of conserving our fish life.

Biological studies, conducted by the Division of Scientific Inquiry, which form the foundation of all activities in the field of conservation, are directed toward the mastery of natural forces to permit the full utilization of the natural supply of food and game fishes without future impairment. These studies are divided into three major fields: aquiculture, or the cultivation and management of fresh-water fishes; commercial fishery investigations; and improvements in the farming of shellfish crops.

The Bureau, through its Division of Scientific Inquiry, has provided the War Department with technical assistance in the construction of an elaborate system of fishways and locks at the Bonneville Dam on the Columbia River which has been highly successful in passing approximately half a million adult salmon over the obstruction during each of the past two years. Cooperating closely with the Bureau of Reclamation, an extensive fish rescue program has been initiated on the Columbia River in connection with the construction of the Grand Coulee Dam, where upwards of 50,000 adult migrating salmon obstructed by the dam have been transferred to available spawning areas in the tributaries below Grand Coulee, and where extensive hatchery facilities for future propagation of these runs of fish will be provided. The problem of fish protection at the Shasta Dam, in connection with the Central Valley Project in California of the Bureau of Reclamation, is now under intensive study and plans for the protection of fish are maturing.

After the ground work of scientific information has been laid down, the fish hatcheries enter into the picture. These are really "fish factories", turning out a living product in the form of baby fish which are planted in the lakes,

streams, and in the ocean, as replacements for those who fall victim to man. Out of the 8 billion eggs, fry, and fingerlings, of 46 different species which constituted the 1939 output of the Bureau's 110 hatcheries, over 120 million game species were distributed to suitable inland lakes and streams. Brook, Loch Leven, rainbow, and black-spotted trouts, largemouth and smallmouth black bass, rock bass, sunfish, crappie, and catfish are the species most extensively propagated for the stocking of game-fish waters.

When biology and fish culture have combined to provide an adequate stock of fish, the Division of Fishery Industries next comes into the picture to perform services for the commercial fisheries, such as the collection and dissemination of fishery statistics, marketing surveys and the like.

The commercial fisheries of the United States are now among the most productive in the world, and in their ramifications are worth about a billion dollars annually to the industrial structure of the Nation. They provide employment to more than 220,000 persons, of whom more than half are fishermen. In addition, about 300,000 persons are engaged in related industries. Thus it is evident that about one in every 250 people in the country is directly or indirectly concerned with the commercial fisheries.

Their annual yield is nearly four and a half billion pounds of protein food and products of use in the arts and industries. Ready for market as processed or manufactured products, this harvest has a value of \$250,000,000 a year in the hands of wholesalers and processors. This includes canned products with a value of \$105,000,000; whole frozen fish, \$9,000,000; cured fish, \$16,000,000; fresh and frozen packaged fish, \$27,000,000; whole fresh fish, \$57,000,000; and byproducts, \$36,000,000.

As in early days, our commercial fisheries are still capable of a vital function in national defense. Our fishermen about equal in number the personnel of the U. S. Navy, and the motorized fishing fleet of 38,000 vessels can constitute a second line of naval force capable of forming a cordon along the entire coast line.

The Division of Fishery Industries embraces three important sections: technology, statistics, and economics.

Technological investigations include studies of the methods of manufacture, preservation, storage, and marketing of both the primary products of the fisheries for human food and the byproducts for animal nutrition; biochemical tests to determine the food value of these products; the development of fishing gear, and experiments in fish cookery.

In June, 1919, the Bureau completed and opened in Washington, D. C. what then constituted the first and only fishery products laboratory in this country. During 1939 funds were allocated to the Bureau for the construction of three new technological laboratories to conduct additional fisheries research work--at Ketchikan, Alaska; College Park, Maryland; and near Mayaguez, Puerto Rico.

Annual and biennial statistical surveys of the commercial fisheries are conducted throughout the principal fish-producing sections of the country. These statistics show the productivity of the fishery; the output of preserved products; the units engaged in capture and processing--including the number of fishermen, boats and fishing devices, and the holdings of fishery products in cold storage on a monthly basis. All of this information is released at frequent intervals and is compiled annually for the use of the trade. It also conducts a market news service to obtain current statistics on production, prices and movement of fishery products at production and consumption centers.

While many people may be somewhat familiar with some of the Bureau's activities, comparatively few are aware that its work is concerned also with such an unusual enterprise as the maintenance of the fur-seal herd in the North Pacific Ocean. By treaty, the United States Government was given the custodianship of this herd, which is the principal source of the greatly desirable Alaska seal fur. Under careful management of the Bureau, the fur-seal herd of the Pribilof Islands has grown from 130,000 animals in 1911 to about 2,020,000 in 1939.

The Alaska Division handles this work in addition to its other function of guarding the salmon and other fishes of Alaska. A very considerable proportion of the total pack of salmon comes from Alaskan waters. Since these fish are all taken when they resort to rivers and inshore waters for spawning, there could be wholesale destruction of them unless their right to perpetuate the race was assured by the laws and regulations which the Bureau enforces.

The fifth, and last, Division of the Bureau--the Law Enforcement Division--is in charge of the enforcement of the Federal law regulating the interstate transportation of largemouth and smallmouth black bass, and the administration of the Whaling Treaty Act. The Anglers' Service, associated with this Division, prepares and issues circulars and leaflets on many subjects of interest to sport fishermen--the game fish laws, for example, data on anglers' licenses, and the revenue derived therefrom.

Sport fishing likewise has developed into a billion-dollar business, for it is estimated that this amount is expended annually for licenses and equipment, transportation, lodging, guides, boats and other necessities. Some sort of sport fishing is accessible to practically everyone in the Nation, whether it be big-game angling from private yachts or charter boats, surf-casting along more than

4,000 miles of seacoast, fly-casting for trout in some mountain stream, or simple hook-and-line fishing in a nearby stream, river or pond. There are nearly 15,000,000 anglers in the country, at a conservative estimate, approximately 8,000,000 of whom take out fishing licenses, thus contributing to State revenues. The remainder are, by local legislations, exempt.

Other important phases of the Bureau's work are concerned with the control of the high-seas fisheries. This phase has been exercised most frequently under the treaty-making authority. Since fish are continually migrating up and down our coasts, ignoring boundary lines between Nations, we must, of necessity, enter into some type of agreement with our neighboring countries for the purpose of restoring and perpetuating these international fisheries.

One of the first of such agreements began in 1923 when a joint fisheries commission to study the problem of renewing and preserving the halibut fishery of the northern Pacific Ocean and Bering Sea was formed by international convention between the United States and Great Britain in respect of Canada--the first treaty in the history of the world designed to save a high-seas fishery.

The International Fisheries Commission, as it is now known, is composed of four members--two appointed by the United States and two by Canada. Since the establishment of this Commission, there has been a marked improvement in the condition of the halibut fishery--more spawning adults, more eggs spawned, and a general increase in abundance. Such a record of achievement would have been utterly impossible if either the United States or Canada had attempted this management independently of the other.

In 1937 the International Pacific Salmon Fisheries Commission was established by a treaty with Canada, after almost forty years of negotiation, for the purpose of protecting, preserving and extending the sockeye salmon fisheries of the great Fraser River system of British Columbia and the State of Washington. The treaty covers the waters of the Straits of Juan de Fuca, Washington Sound, the Gulf of Georgia, and certain areas of Puget Sound.

This Commission with three members from the United States and three from Canada--is charged with the duty of making extensive investigations of the natural history of sockeye salmon runs to Fraser River, and is granted authority to regulate the salmon fisheries in international and territorial waters through which Fraser River sockeye salmon pass on their spawning migration.

When the Commission came into being in 1937, the sockeye salmon was almost a non-existent fishery. That year the take was but 6 percent of what it had been when the run was normal. It is now estimated that the Canadian and American fish will be worth \$30,000,000 a year ultimately, after the run is restored, based on present value. This fishery resource is international in scope, and only through international cooperation can it be rehabilitated and perpetuated.

The Bureau of Fisheries also participates in the meetings of the North American Council on Fishery Investigations--with representatives from Canada, Newfoundland, and the United States--for the discussion of fishery problems in the North Atlantic area.

Through the efforts of the Interstate Committee on Great Lakes Fisheries it is hoped that machinery will be effected to bring about uniform regulation of the Great Lakes fisheries. The formation of such a compact has been authorized by the Congress of the United States.

To a greater degree, perhaps, than any other governmental agency, the Bureau of Fisheries has occupied the position of a steward accountable to the Nation for the wise administration of a natural resource. Under the new Fish and Wildlife Service, this function will benefit from new efficiency and opportunity. It has not been merely an organization devoted to serving and promoting the commercial fishing industry. It has not been commercial-fish minded, it has not been game-fish minded, but it always has been fish-conservation minded, and has exercised to the utmost its authority, its personnel, and its funds, for wise conservation and utilization of all fish--commercial and sport--for all Americans.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF FISHERIES
WASHINGTON

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BUREAU OF FISHERIES COMPLETES 70 YEARS OF SERVICE

To a greater degree, perhaps, than any other governmental agency, the United States Bureau of Fisheries--for nearly three-quarters of a century--has occupied the position of a steward accountable to the nation for the wise administration of a natural resource. Since 1871 it has been the sole governmental agency concerned with the promotion, management, and conservation of both the fresh-water and marine fishery resources of our nation. From earliest times these fishery resources have played a significant role in the social and economic life of the American continent for they are one of the two fundamental sources of foodstuffs for our country. The colonization of the New World was indeed made possible by the large supply of fish in American waters.

In order that the wealth of the sea be conserved and at the same time furnish food for the nation and recreation for a multitude of people, it is vitally essential that an accurate knowledge of the needs and dangers of fish from the very beginning of their existence to their maturity be secured. It is recognized that effective conservation depends upon a comprehensive knowledge of many facts concerning the life of fishes and the economy of the sea.

The work of the Bureau of Fisheries--a unit of the United States Department of the Interior since July 1, 1939--has never been advertised or dramatized deliberately to catch the imagination of the public. It has been content to stand on its record for achievements in the field of conservation.

A look at this record of progress and a brief outline of the history of the Bureau--its purposes and activities--since its inception in 1871, will be sufficient to show that its primary purpose is the conservation, or wise management and utilization, of our fishery resources of the continental United States and of Alaska.

Nearly seventy years ago, during the administration of President Ulysses S. Grant, the Federal Government began its battle to protect and maintain the fishery resources of our country in order to assure a supply of marine foods, as well as the continuation of the sport of angling, to future generations.

Duly aware of the alarm which was spreading because over-fishing was putting a drain on this natural resource which Nature, without help, could not replenish, Congress established a Fish Commission, in 1871: it passed a joint resolution authorizing the appointment of a "Commissioner of Fish and Fisheries for the purpose of investigating the alleged decrease of the food fishes of the seacoasts and lakes of the United States, and to suggest remedial measures."

In its 69 years of existence, the Bureau has grown from a small, supposedly temporary, "one-man in one-room," institution into one of our foremost Federal conservation agencies whose activities extend into every State of the Union and into every one of Uncle Sam's possessions, and which reaches out to neighboring waters and into the depths of the sea, leaving no line of fisheries work untouched. Its scope of work, personnel, and equipment have so expanded through the years that it now requires 80 employees in its administrative offices, located in the Department of Commerce Building in Washington, D.C., to direct and supervise some 600 employees in its field service in the operation and maintenance of 110 hatcheries and 35 biological laboratories and statistical offices.

In 1871, when the new Fish Commission had been set up, Congress stipulated that the Commissioner should be "a civil officer of the Government, of proved scientific and practical acquaintance with the fishes of the coast, to serve without additional salary."

No better man could have been found in that day than the man selected: Spencer Fullerton Baird. He was a preeminent scientist, already internationally famous as author of a score of monographs on fishery subjects. Then Assistant Secretary of the Smithsonian Institution, Professor Baird accepted the new appointment and served continuously, without additional compensation, until his death in 1887, to be succeeded by his able assistant, Dr. G. Brown Goode.

As the work of the Fish Commission grew in importance, Congress placed the work of developing and fostering the fisheries on a firmer foundation by the Act of January 20, 1888, which made the Commissioner of Fish and Fisheries a salaried officer and required him to devote his whole time to the work of the Commission. In that year Marshall McDonald, a practical fish-culturist, became the third Commissioner and the first salaried officer.

Upon his death in 1895, Captain John J. Brice, a retired naval officer, held the office for two years, being succeeded in 1898 by George M. Bowers who was Commissioner for 16 years. In 1913, Dr. Hugh M. Smith, who had been associated with the Bureau in various capacities,

became its head officer and remained as such until 1922. Henry O'Malley, like McDonald, another practical fish-culturist, succeeded him. In 1933, Frank T. Bell, a business man from Washington State, became the eighth Commissioner, holding that position until his resignation in March 1939. Since then Deputy Commissioner Charles E. Jackson, of South Carolina, has guided the functions of the Bureau in the capacity of Acting Commissioner.

As first established, the Fish Commission was an independent agency, with the Commissioner reporting directly to Congress. On July 1, 1903, it was included by law in the new Department of Commerce and Labor and from that time on was designated, by departmental order, as "Bureau of Fisheries." On subdivision of this department in 1913, the Bureau became identified with the Department of Commerce where it remained until its transfer to the Department of the Interior on July 1, 1939.

When the Fish Commission was instituted, it was expected that its work would be completed within a few years, hence no office space was provided by Congress. For many years Commissioner Baird set aside rooms for it gratuitously in his private residence. The work of the Commission, however, was destined to be continued and to grow. In 1875 Congress authorized the renting of a house for the use of the Commission. This still proved to be inadequate and the Commissioner continued to give space in his private residence. Later, other small buildings were rented until 1889, when the Bureau became housed under one roof in the Armory Building at 6th and B Streets, S.W. There it remained until removal in January 1932 to its present location in the new Department of Commerce building.

The original conception of the Bureau contemplated an organization for scientific, statistical, and practical investigations of the fisheries. In 1872, it was given authority to establish fish hatcheries for the propagation of food fishes. In 1905, the Bureau was charged with the administration and enforcement of the laws governing the salmon fisheries of Alaska, and in 1908 the control of the fur-seals and foxes of the Pribilof Islands was transferred to it.

Other functions have been allocated to the Bureau from time to time.

In 1906, by an Act of Congress (modified slightly in 1914) it was charged with the duty of enforcing an act to regulate the taking of sponges in the waters of the Gulf of Mexico and the Straits of Florida outside of State jurisdiction; in 1920 it was given supervision of the conservation of sea otters, walruses, and other aquatic mammals in Alaska; and in 1922 it was authorized to conduct the rescue of fishes from flooded areas throughout the Mississippi Valley, and to propagate mussels.

The specification of fish protection at dams built under license from the Federal Power Commission was authorized by the Water Power Act of 1924.. Also, in 1924, the Bureau was given administrative control over fishery matters in the Upper Mississippi Wildlife and Fish Refuge, involving the operation of large propagating ponds to furnish game fish for restocking within the refuge and throughout the adjacent area.

Enforcement of the act relating to the interstate transportation of largemouth and smallmouth black bass was entrusted to the Bureau in 1930; administration of the act authorizing cooperative associations of producers of aquatic products, in 1935; administration of the Whaling Treaty Act; in 1936; and in 1939 funds were provided for the establishment of a Hydraulics Section to design and construct fish screens, ladders, and other fish protective devices.

Except in the Territory of Alaska, the Bureau is without executive control of the fisheries, as under the Constitution the several States legislate for themselves. Essentially, the Bureau of Fisheries is a scientific organization; and the results of its investigations are, therefore, furnished to State fishery authorities as a basis for adequate protective legislation, and to the fishing industry for more economical and lasting use of fishery products. Although it acts in a purely advisory capacity, it influences fishery legislation profoundly. In Alaska where the most important salmon fisheries are located, the Bureau enforces fishery laws; and in the Pribilof Islands, where the valuable fur seals come ashore each year to breed, it has entire administrative control of the native inhabitants, the fur-seal herds, and the growing of foxes for their pelts.

Federal activities in fishery conservation in the United States are of the positive kind looking toward the development and complete utilization of aquatic resources by means of scientific research and practical fish culture, rather than by negative or restrictive activities such as are involved in the enforcement of regulatory legislation.

The Bureau is now organized into five divisions which handle separate phases of the problem of conserving our fish life.

The basis of all conservation measures is facts and information, and these are obtained through the activities of the Division of Scientific Inquiry which conducts biological studies of fish and shellfish. These biological studies--which form the foundation of all activities in the field of conservation--are directed toward the mastery of natural forces to permit the full utilization of the natural supply of food and game fishes without future impairment. They are divided into three major fields: (1) aquaculture, or the cultivation and management of freshwater fishes; (2) commercial fishery investigations; and (3) improvements in the farming of shellfish crops.

Aquicultural investigations are subdivided into three principal lines: the development of means to obtain the maximum production of food and game fishes consistent with environmental conditions; the improvement of methods of artificially propagating and rearing fish; and the control of fish parasites and diseases.

Current commercial fishery investigations include extensive studies of the biology of fish populations for such important species as the haddock, mackerel, and flounders in New England; the shad and striped bass of the Atlantic coast; the common shrimp of the Atlantic and Gulf coasts; the California pilchard, or sardine; the Pacific salmon and herring; and the important food fishes of the Great Lakes. These studies look toward stabilization of yield, an important goal of modern fishery science.

Oyster investigations, also, are now directed along three principal lines: surveys to determine the probable value of new bottoms for oyster culture; aids to the industry, such as more efficient methods of growing seed oysters, less expensive means of preparation for market, the control of enemies such as the starfish and the oyster drill, the investigation of pollution effects; and, finally, research into the fundamentals of oyster physiology and behavior in order that we may have a better understanding of the adjustment of the oyster to changes in its environment. Such studies enable the oysterman to improve constantly the quality of the product offered the public and at the same time reduce the cost of production.

The Bureau, through its Division of Scientific Inquiry, has provided the War Department with technical assistance in the construction of an elaborate system of fishways and locks at the Bonneville Dam on the Columbia River which has been highly successful in passing approximately half a million adult salmon over the obstruction during each of the past two years.

Cooperating closely with the Bureau of Reclamation, an extensive fish rescue program has been initiated on the Columbia River in connection with the construction of the Grand Coulee Dam, where upwards of 50,000 adult migrating salmon obstructed by the dam have been transferred to available spawning areas in the tributaries below Grand Coulee Dam, and where extensive hatchery facilities for future propagation of these runs of fish will be provided.

The problem of fish protection at the Shasta Dam in connection with the Central Valley Project in California of the Bureau of Reclamation is now under intensive study and plans for the protection of fish are maturing.

Five major screening projects have been completed or are nearly completed on the large Reclamation projects in the Columbia River basin, each of which will protect important supplies of salmon from destruction.

After the ground work of scientific information has been laid down the fish hatcheries enter into the picture. These are really fish factories turning out a living product in the form of baby fish which are planted in the lakes, streams, and in the ocean as replacements for those who fall victim to man. Out of the 8 billion eggs, fry, and fingerlings of 46 different species which constituted the 1939 output of the Bureau's 110 hatcheries, over 120 million game fishes were distributed to suitable inland lakes and streams. Brook, Loch Leven, rainbow, and black-spotted trouts, largemouth and smallmouth black bass, rock bass, sunfish, crappie, and catfish are the species most extensively propagated for the stocking of game-fish waters.

Three specially equipped railroad cars are operated for the work of fish distribution and travel approximately 50,000 miles every year, stocking public waters in practically every State in the Union. These cars are of the Pullman type and travel in passenger trains, with a crew of five men. They are equipped with both steam and electric air compressors for forcing air into the fish containers to renew the supply of oxygen in the water. The new steel cars are equipped to carry from 250 to 325 regulation pails of fish, in insulated compartments. An auxiliary "messenger service" is maintained which carries the fish to places not reached by the cars. The Bureau also operates a small fleet of specially designed tank trucks which carry the same provision for aeration as the fish cars. As these trucks are perfected they will, in all likelihood, entirely supplant the railroad cars since they are more economical to operate.

When biology and fish culture have combined to provide an adequate stock of fish, the Division of Fishery Industries comes into the picture to perform services for the commercial fisheries such as the collection and dissemination of fishery statistics, marketing surveys, etc.

The commercial fisheries of the United States are now among the most productive in the world, and in their ramifications are worth about a billion dollars annually to the industrial structure of the nation. They provide employment to more than 220,000 persons, of whom more than half are fishermen; in addition, about 300,000 persons are engaged in related industries. Thus, about one in every 250 people in the country is directly or indirectly concerned.

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products, \$105,000,000; whole frozen fish, \$9,000,000; cured fish, \$16,000,000; fresh and frozen packaged fish, \$27,000,000; whole fresh fish, \$57,000,000; and byproducts, \$36,000,000.

As in early days, our commercial fisheries are still important in regard to defense; our fishermen about equal in number the personnel of the United States Navy, and the motorized fishing fleet of 38,000 vessels constitutes a second line of naval defense capable of forming a cordon along the entire coast line.

The Division of Fishery Industries as now constituted embraces three main sections: technology, statistics, and economics.

In its technological work it covers problems in such fields as the following: freezing, smoking, and canning of fish; tests to determine the relative freshness of fish; methods for preventing rancidity in fish and fish oils; methods for retarding the decomposition of fresh fish; evaluation of the proteins in fish; studies of the mineral and vitamin content of fishery products; methods for manufacturing fish oils of high vitamin potency; studies to utilize waste fish and fish cuttings in the manufacture of fish meal and oil; studies of the nutritive value of fish; use of fish meals and oils in the diet of domestic animals; and experiments in fish cookery.

In June 1919 the Bureau completed and opened in Washington, D.C., what then constituted the first and only fishery products laboratory in this country. During 1939 funds were allocated to the Bureau for the construction of three new technological laboratories, to conduct additional fisheries research work, at Ketchikan, Alaska; College Park, Maryland; and in Puerto Rico, near Mayaguez.

Annual and biennial statistical surveys of the commercial fisheries are conducted throughout the principal fish-producing sections of the country. These statistics show the productivity of the fishery, the output of preserved products, the units engaged in capture and processing including the number of fishermen, boats and fishing devices, and the holdings of fishery products in cold storage on a monthly basis--all of which information is released at frequent intervals, as well as compiled annually, for the use of the trade.

Surveys of marketing and distribution of fishery products in various cities of the country or studies of the marketing of certain types of fishery products in the entire country have been conducted to supply producers or wholesalers with data on market supplies and demand, sources from which fish are received; seasons of abundance, consumers' likes and dislikes for fishery products, warehousing facilities, methods of transportation, and other phases. Such information is necessary if the fishery industry is to expand and hold its place in the economic structure of the nation.

Further duties were placed upon this Division in 1937 when the Congress assigned to it the duty of conducting a market news service to obtain current statistics on production, prices, and movement of fishery products at production and consumption centers. Today, six of these offices have been opened, in New York, Boston, Chicago, Seattle, Jacksonville, Florida, and New Orleans. Recently arrangements have been completed for radio programs to broadcast market news information in Chicago, Boston, New Orleans, and Jacksonville, and soon will begin a similar service in New York and Seattle.

The diversity of this Division's work is indicated by the fact that it has on its staff chemists, biochemists, technologists, engineers, bacteriologists, pharmacologists, statisticians, and economists to conduct its researches.

While many people may be somewhat familiar with the Bureau's activities as outlined above, comparatively few are aware that its work is connected with such an unusual enterprise as the maintenance of the fur seal herd in the North Pacific Ocean. By treaty, the United States Government was given the custodianship of this herd, which is the principal source of the greatly desirable Alaska seal fur. Under the scientific and efficient management of the Bureau, which has taken into consideration all phases of the natural history of fur seals, the herd of the Pribilof Islands has grown from 130,000 animals in 1911 to about 2,020,000 in 1939. Authorities accord the Bureau with having achieved, hereby, one of the greatest feats of animal conservation in the history of the world.

The killing of seals on the islands is carried on under the careful supervision of the Bureau's experts. Only the young males are killed. Of these there is always an excess, since the fur seal is highly polygamous. The seal skins, as well as the fox skins obtained from the fox-trapping operations, are prepared and shipped to the United States for sale at public auction. The Bureau is also entrusted with the government, maintenance, and education of the natives of the Pribilof Islands.

In addition, this division carries on its other function of enforcing the laws and regulations governing the salmon and other fishes of Alaska. While these fisheries have been made the subject of Congressional legislation from time to time over a period of many years, it was not until 1924 that legislation designed to meet the requirements fully was enacted.

There has been brought about by this function the control of the Alaskan fisheries along scientific and economic lines. Beneficial results have been clearly demonstrated. These laws and regulations are enforced by members of the Bureau's Alaska personnel, which in the active fishing season is augmented by a considerable force of temporary employees. A fleet of patrol vessels is maintained and in addition other vessels are chartered when necessary for patrol. Some use is made also of chartered airplane service, both for patrol and for investigational work.

A very considerable proportion of the total pack of salmon comes from Alaskan waters. Since these fish are all taken when they resort to rivers and inshore waters for spawning, there could be wholesale destruction of them unless their right to perpetuate the race was assured by the laws and regulations which the Bureau enforces.

This division also operates, during the summer sealing season, a by-products plant at St. Paul Island for the utilization of fur-seal carcasses which resulted, during 1938, in an output of 30,587 gallons of oil and 178½ tons of meal. Except for limited quantities retained at the islands for feeding of foxes, these products were shipped to Seattle, where the oil was sold for commercial purposes, and the meal was turned over to the Division of Fish Culture for use as fish food at the hatcheries.

The functions of the fifth, and last, division of the Bureau--that of Law Enforcement--embraces administration of the Federal law regulating the interstate transportation of largemouth and smallmouth black bass, and the administration of the Whaling Treaty Act. The Bureau of Fisheries issues the necessary licenses to operate whaling factory ships, shore stations, and catcher or killer boats; conducts biological investigations; and also collects statistical data on the number of whales taken by the United States whalers, the sizes, species, sex, etc.

The Anglers' Service, associated with this division, prepares and issues circulars and leaflets on many subjects of interest to sport fishermen, such as the game fish laws, data on anglers' licenses and the revenue derived therefrom.

Sport fishing, likewise, has developed into a billion-dollar business for it is estimated that this amount is expended annually for licenses and equipment, transportation, lodging, guides, boats, and other necessities. Some sort of sport fishing is accessible to practically everyone in the nation, whether it be big-game angling from private yachts or charter boats, surf-casting along more than 4,000 miles of seacoast, fly-casting for trout in some mountain stream, or simple hook-and-line fishing in a nearby stream, river, or pond. At any rate there are nearly 15,000,000 anglers in the country, at a conservative estimate, approximately 8 million of whom take out fishing licenses, the remainder being exempt.

Since fish recognize no national boundaries in their migrations, the protection, perpetuation, and restoration of these international fisheries can be assured only through agreements with neighboring nations. These are negotiated under the treaty-making authority which is vested in the President, with the advice and consent of the Senate. The Bureau of Fisheries is called upon to submit appropriate recommendations, based upon their scientific researches, during the course of these negotiations.

One of the first of such agreements began in 1923, when a joint fisheries commission to study the problem of renewing and preserving the halibut

fishery of the northern Pacific Ocean and Bering Sea was formed by international convention between the United States and Great Britain in respect of Canada--the first treaty in the history of the world designed to save a high-sea fishery. The International Fisheries Commission, as it is known, is composed of four members--two appointed by the United States and two by Canada. Present Acting Commissioner Jackson was appointed as one of the representatives of the United States on this Commission on February 1, 1940. The other United States member is Edward W. Allen of Seattle, Washington, who was elected Secretary of the Commission on December 14, 1939. Since the establishment of this Commission there has been a marked improvement in the condition of the halibut fishery--more spawning adults, more eggs spawned, and a general increase in abundance. Such a record of achievement would have been utterly impossible if either the United States or Canada had attempted this management independently of the other.

In 1937 the International Pacific Salmon Fisheries Commission was established by a treaty with Canada, after forty years of negotiation, for the purpose of protecting, preserving, and extending the sockeye salmon fisheries of the great Fraser River system of British Columbia and the State of Washington. The treaty covers the waters of the Straits of Juan de Fuca, Washington Sound, the Strait of Georgia, and certain areas of Puget Sound.

This Commission--of which Mr. Jackson has been a member since August 23, 1937--provides for six members, three from the United States and three from Canada, and is empowered to investigate the natural history of the sockeye salmon, hatchery methods, spawning-ground conditions, and related matters. It may conduct fish cultural operations, improve spawning grounds, stock the Fraser with sockeye by such methods as it may deem advisable, and recommend removal of obstructions to migration. No regulations of fishing, however, shall be promulgated or enforced prior to the amassing of eight years of scientific investigations, covering two cycles of sockeye salmon runs.

When the Commission came into being in 1937, the sockeye salmon was almost a non-existent fishery. That year the take was but six percent of what it had been when the run was normal. With and after the hoped-for restoration of this run, it is estimated that the Canadian and American fish could ultimately be worth \$30,000,000 a year, based on present values. This fishery resource is international in scope, and only through international cooperation can it be rehabilitated and perpetuated.

The Bureau of Fisheries participates in the meetings of the North American Council on Fishery Investigations for the discussion of fishery problems in the North Atlantic area. This group numbers representatives from Canada, Newfoundland, France, and the United States.

A Board of Inquiry for the Great Lakes Fisheries was established on February 29, 1940, when the Secretary of State of the United States and the Minister of Canada, Loring Christie, signed an exchange of notes.

The problem of conserving the fisheries of the Great Lakes has long engaged the attention of the Governments of Canada and the United States, particularly the Province of Ontario, and the States bordering on the Great Lakes. The production of certain species of Great Lakes fish has reached low levels. The Board will make a study of the taking of fish and will submit recommendations as to methods of preserving and developing the fisheries. It will not have regulatory powers.

From this brief account may be apparent many of the methods by which the Bureau of Fisheries accomplishes its various purposes. They are international as well as national in scope, and often far afield from routine governmental function. Bureau activities breathe of the outdoors. They are essential in assuring continued existence of a resource which the public has hitherto largely taken for granted, for the fisheries, as much as any other natural resource, are the property of all the people.

Federal fish hatcheries are located in 44 States, thus, many people will sooner or later be in the vicinity of one of these interesting institutions. As Government agencies they are open to visitors, and the opportunity to explain their work will be welcomed. The Bureau of Fisheries urges those who may have the opportunity, to visit the scene of any of its activities and to learn more fully the purposes and methods of its work, which covers the conservation of all fish--commercial and sport--for all Americans.

June 15, 1940.
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